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(54) Title: MODULATING DEVELOPMENTAL PATHWAYS IN PLANTS

(57) Abstract: The invention relates to a method to modulate plant growth or development by modifying genes in plants. The invention among others relates to modifying RKS genes or gene products as found in *Arabidopsis thaliana* or other plants. The invention provides a method for modulating a developmental pathway of a plant or plant cell comprising modifying a gene or modifying expression of said gene, wherein said gene is encoding a protein belonging to a signaling complex comprising RKS protein, ELS protein, NDR/NHL protein, SBP/SP1 protein and RKS/ELS ligand protein.

INTERNATIONAL SEARCH REPORT

 Internat. Application No
 PCT/NL 03/00524

 A. CLASSIFICATION OF SUBJECT MATTER
 IPC 7 C12N15/82 C07K14/415

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C12N C07K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, BIOSIS, MEDLINE, EMBASE, EMBL, Sequence Search

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 01/029240 A (KOP DIANNE ANTOINETTE MARIA V ; BOER ANNE DOUWE DE (NL); GENETWISTE) 26 April 2001 (2001-04-26) pages 13, 15-17, 29, 30, 37; claims 1-5, 14-16, 25; Figures 1, 8a-23a cited by the applicant	1-17
X	US 2002/069433 A1 (DE VRIES SAPE CORNELIS ET AL) 6 June 2002 (2002-06-06) pages 2, 3, and 8	1-17
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☒ Further documents are listed in the continuation of box C

☒ Patent family members are listed in annex

* Special categories of cited documents:

A document defining the general state of the art which is not considered to be of particular relevance

C earlier document but published on or after the international filing date

L document which may throw doubts on priority claims or which is cited to establish the publication date of another citation or other special reason (as specified)

O document relating to an oral disclosure, use, exhibition or other means

P document published prior to the international filing date but later than the priority date claimed

T later document published after the international filing date as a priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

** document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents; such combination being obvious to a person skilled in the art

S document number of the same patent family

Date of the actual completion of the international search

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INTERNATIONAL SEARCH REPORT

 Internet Application No
 PCT/WL 03/00524

C. (Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 02/46439 A (SCHERES BEN ; HEIDSTRA RENZE (NL); UNIV UTRECHT (NL)) 13 June 2002 (2002-06-13) abstract; p. 4-6, 80-81; claims 15-17, 46-50 -----	1-17
A	WO 98/22594 A (UNIV CALIFORNIA) 28 May 1998 (1998-05-28) pages 1, 19, and 20 -----	1-17
A	SCHMIDT E D L ET AL: "A LEUCINE-RICH REPEAT CONTAINING RECEPTOR-LIKE KINASE MARKS SOMATIC PLANT CELLS COMPETENT TO FORM EMBRYOS" DEVELOPMENT, COMPANY OF BIOLOGISTS, CAMBRIDGE,, GB, vol. 124, no. 10, 1997, pages 2049-2062, XP002040869 ISSN: 0950-1991 abstract; cited by the applicant -----	1-17
A	ZHANG, X.: "Leucine-rich repeat receptor-kinases in plants" PLANT MOLECULAR BIOLOGY REPORTER, vol. 16, - 1998 page 301-311, XP002258725 Table 1 -----	1-17

Form PCT/ISA(210) (continuation of second sheet) (July 1992)

INTERNATIONAL SEARCH REPORT

Int. application No.
NL 03/00524

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☒ Claims Nos.: 1, 2, 4, 4, 6, 8, 10, 12, 14-17
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
see FURTHER INFORMATION sheet PCT/ISA/210
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:
see PCT/ISA/210 annex

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box I.2

Claims Nos.: 1, 2, 4, 4, 6, 8, 10,12, 14-17

Present claim 1 relates to a method encompassing an extremely large number of possible proteins. As in particular the claimed ligand proteins are not supported within the meaning of Article 6 PCT the claims so lack support, and the application so lacks disclosure (Article 5 PCT), that a meaningful search over the whole of the claimed scope is impossible. Consequently, the search has been carried out for those parts of the claims which appear to be supported and disclosed, namely the sequences as given in the sequence listing.

The applicant's attention is drawn to the fact that claims relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure. If the application proceeds into the regional phase before the EPO, the applicant is reminded that a search may be carried out during examination before the EPO (see EPO Guideline C-VI, 8.5), should the problems which led to the Article 17(2) declaration be overcome.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-13, 15, 17 (all partially)

A method for modulating a developmental pathway of a plant comprising modifying expression of a RKS protein.

2. claims: 1, 2, 4, 5, 6, 8-13, 15, 17 (all partially)

A method for modulating a developmental pathway of a plant comprising modifying expression of a ELS protein.

3. claims: 1, 2, 4, 5, 8, 10, 12, 14-17 (all partially)

A method for modulating a developmental pathway of a plant comprising modifying expression of a NDR/NHL protein.

4. claims: 1, 2, 4, 6, 8, 10, 12, 15, 17 (all partially)

A method for modulating a developmental pathway of a plant comprising modifying expression of a SBP/SPL protein.

5. claims: 1, 2, 4, 5, 8, 10, 12, 15, 17 (all partially)

A method for modulating a developmental pathway of a plant comprising modifying expression of a RKS/ELS ligand protein.

6. claims: 1, 2, 4, 6, 8, 10, 12, 15, 17 (all partially)

A method for modulating a developmental pathway of a plant comprising modifying expression of a ligand protein for the complex claimed in claim 1.

7. claims: 14, 16

Method for providing resistance to a plant comprising modifying expression of a gene encoding a protein belonging to a signalling complex comprising NDR/NHL protein.

INTERNATIONAL SEARCH REPORT

 Internal Application No
 PCT/NE 03/00524

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